

Migration to the TOSS4 Operating System

RECENT UPDATES: Due to NASA security requirements, the operating systems for nearly all HECC systems have been migrated from TOSS3 to TOSS4. The alternate operating environments :aoe=sles12 and :aoe=sles15 are no longer available on any of the compute nodes.

The production environment for most NAS systems is Red Hat Enterprise Linux-based Tri-Lab Operating System Stack (TOSS), developed at the U.S. Department of Energy.

This article provides some basic information to help you run applications on the TOSS4 operating system.

Pleiades Front Ends (PFEs) and the PFE Load Balancer

Using the [Pleiades Front End Load Balancer](#) will select pfe[20-23], which are still running TOSS3. For example:

```
your_local_host% ssh pfe
pfe23%
```

To find out the operating system of the PFE you are on, do:

```
pfe% grep . /etc/os-release
```

Compute Nodes

All cluster systems, including all CPU and CPU+GPU model types in Pleiades, Electra, Aitken, and Endeavour nodes run the TOSS image by default.

The following systems are currently being upgraded to Red Hat Enterprise Linux (RHEL8):

- The Lou front-end nodes, lfe[5-8].
- The Lou Data Analysis (LDAN) nodes.

Running PBS Jobs

Once the transition is complete, all jobs submitted to run on the compute nodes will use :aoe=toss4 by default.

PBS no longer schedules jobs requesting the previously available alternate operating environments :aoe=sles12 or :aoe=sles15.

Using Software Modules

On the PFEs and compute nodes booted with a TOSS 3 image, the default MODULEPATH includes the following:

```
/usr/share/modules/modulefiles
/nasa/modulefiles/toss3
/nasa/modulefiles/spack/gcc-4.8/
/nasa/modulefiles/pkgsrc/toss3/
```

On the Aitken Rome nodes booted with a TOSS4 image, the default MODULEPATH includes:

```
/usr/share/Modules/modulefiles
/nasa/modulefiles/toss4
/nasa/modulefiles/spack
/nasa/modulefiles/pkgsrc/toss4
```

Use the module avail command to find what software modules are added under these paths.

Building and Running Your Application

Many executables built under SLES 12 will also run under TOSS3. Similarly, executables built under TOSS3 may also run under TOSS4. Please check for both correctness and performance.

Some versions of HPE MPT are not compatible with TOSS4. We recommend using the default MPT version, which is accessed by specifying mpi-hpe/mpt as described in [Using the NAS Recommended MPT Library](#). The default version will always be compatible with both TOSS3 and TOSS4.

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